Problem 1. Let \( F = (y - 6x^2)i + (3x + y^2)j \) and \( C \) be the boundary of the triangle bounded by the lines \( y = 0, y = x \) and \( x = 1 \). Use Green’s Theorem to find the counterclockwise circulation of the field \( F \) around the curve \( C \).

Problem 2. Find the area of the cap cut from the paraboloid \( y^2 + z^2 = 3x \) by the plane \( x = 3 \).

Problem 3. Find the outward flux of the field \( F = 3xz^2i + yj - z^3k \) across the surface of the solid in the first octant that is bounded by the cylinder \( x^2 + 4y^2 = 16 \) and the planes \( y = 2z, x = 0, \) and \( z = 0 \).